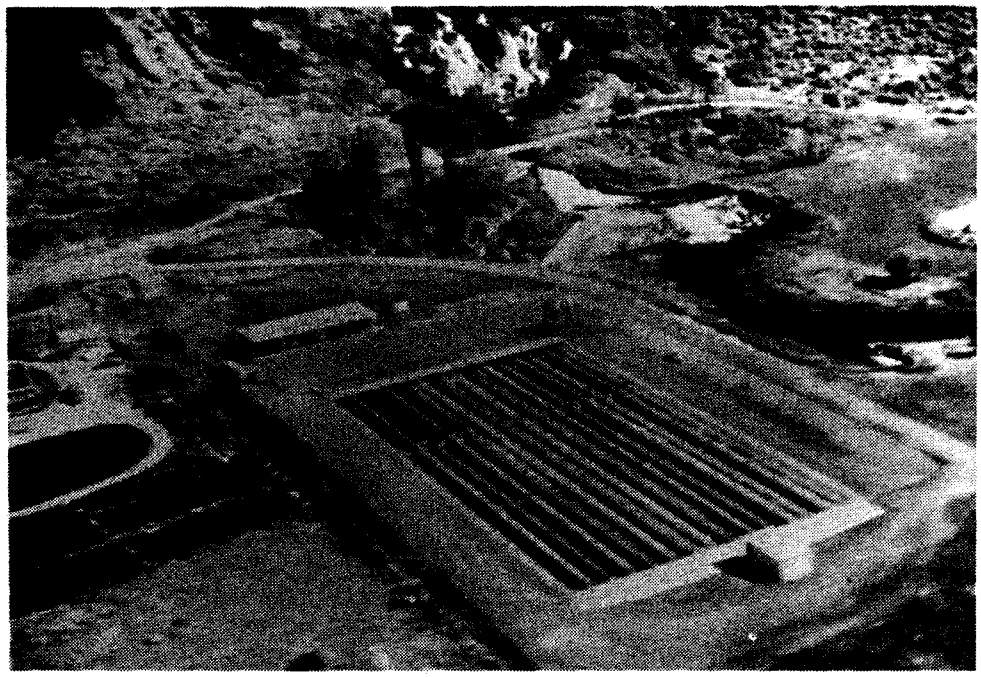
Idaho Power

NIAGARA SPRINGS STEELHEAD HATCHERY

Annual Report

Brood Year 1987



by

Jerry Mowery
Hatchery Superintendent III

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ABSTRACT

Niagara Springs Hatchery received 2,560,589 steelhead eggs from Pahsimeroi and Oxbow hatcheries in April and May of 1987. The hatchery received 368,480 swim-up steelhead fry from the Sawtooth Hatchery in June. These steelhead were from eggs taken at the Pahsimeroi Hatchery.

A feed conversion of 1.44 was achieved after feeding 584,290 pounds of feed to produce 405,516 pounds of fish. Fish feed costs were $146,758.80 for the year, resulting in 36 cents per pound of fish produced.

In October, 404,000 fingerling steelhead were released in Hells Canyon. Spring smolt releases included: 665,800 fish in the Pahsimeroi River, 103,500 in the Salmon River at Shoup Bridge, 102,800 in Panther Creek, and 877,400 smolts in the Snake River below Hells Canyon Dam. The total number of 1987 brood year steelhead planted was 2,153,500.

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Niagara Springs Steelhead Hatchery is located 10 miles south of Wendell, Idaho, in the Snake River Canyon. The hatchery is owned and financed by Idaho Power Company and is one of the largest privately owned steelhead hatcheries in the country. The hatchery is part of Idaho Power's multimillion dollar fish conservation program required under the terms of their Federal Energy Regulatory Commission license for the operation of the Hells Canyon hydroelectric complex. The purpose of the hatchery is to relocate a portion of the Snake River run of steelhead trout into the Salmon River and also to preserve and enhance the steelhead run in the Snake River below Hells Canyon Dam. The Idaho Department of Fish and Game staffs and operates this facility.

This hatchery's water supply is by gravity flow from Niagara Springs and maintains a constant, year-round temperature of 58 degrees F. Twenty upwelling incubators are used for hatching of eyed eggs. Rearing units include 20 6-foot circular vats and 14 300-foot raceways which are capable of using 130 cubic feet per second of water. Seven of these 300-foot raceways accommodate 14 20-foot nursery raceways. Spring water is also used for domestic purposes and for the irrigation of 10 acres of lawn.

The hatchery consists of a 30 x 90 foot building that encloses an office, two incubator rooms, a storage room, a small shop, a garage, and public restrooms. The hatchery also has a small storage building for storing pumps and other equipment. A 20-ton water chiller located at the south end of the raceways cools spring water for fish transportation. Three wood frame houses and one mobile home provide housing for the four permanent employees.

OBJECTIVES

The purpose of Niagara Springs Hatchery is to preserve a run of steelhead (Salmo gairdneri) in the Snake River below Hells Canyon Dam and to relocate a portion of that run to the Salmon River drainage.

The fish culture objectives of Niagara Springs Hatchery are:

1. To rear 200,000 pounds of steelhead smolts for release in the Salmon River drainage.

2. To rear 200,000 pounds of steelhead smolts for release in the Snake River below Hells Canyon Dam.

EGG/FRY SHIPMENTS AND INITIAL FEEDING

Pahsimeroi Hatchery shipped 1,271,560 eyed steelhead eggs to Niagara Springs Hatchery beginning April 13 and ending May 8, 1987. Eyed eggs from the Oxbow Hatchery were received April 28 to May 7, 1987 and totaled 1,289,029.

The first egg take began hatching on April 16, 1987, and the last egg take hatched on May 11, 1987. Fry were started on soft-moist feed when visual observation indicated that 50% of the fish had reached swim-up stage or 3,600 fish per pound. They were fed "ad lib" until a strong feeding response occurred and then switched to the hatchery constant method.

A total of 368,480 swim-up fry from Sawtooth Hatchery were received on June 15 and June 16, 1987. These fry originated from eyed eggs received from Pahsimeroi Hatchery. The fry were hatched in Sawtooth well water and hauled by fish truck to Niagara Springs Hatchery. All fry were placed directly into outside 20-foot nursery raceways.

FISH HEALTH

On May 15, 1987, all outside raceways were disinfected with 12.5% chlorine solution to prevent disease contamination and algal growth. All eggs were disinfected with a 1:100 solution of iodine before being placed into the incubators to prevent disease transmittal. Prophylactic treatments of Benzalkonium Chloride at 1.5 to 2.0 ppm were administered to all fish after being moved to outside nursery ponds and after adipose fin clipping.

Fry were held in the inside circular vats for three weeks longer this year because construction of a new intake pool dam and an additional water control gate prevented use of water for the outside raceways. Density indexes in the circular vats reached 1.2, and dissolved oxygen levels were reduced to 5 mg/l before fry could be moved outside. These conditions resulted in extra man-hours cleaning vats and increased stress on the fry.

Mortalities in three nursery raceways reached 5,000 fish per day per raceway during the first week of June. Pathological analysis was not performed because diagnosis was needed immediately to preserve the remaining fry. A virus infection was suspected, and a decision was made by management to destroy 326,370 fish on June 9, 1987.

Coldwater disease was discovered by the Eagle Fish Health Laboratory in one raceway of fish during July. Medicated feed containing 2 g per pound of active oxytetracycline was administered for 14 days, and 9,000 fish were lost before the disease disappeared.

Infectious pancreatic necrosis (IPN) was diagnosed by Eagle Fish Health Laboratory in one raceway and was followed by a secondary columnaris infection in July and August of 1987. These diseases caused the loss of 2,100 fish.

Infectious hematopoietic necrosis (IHN) was confirmed by Eagle Fish Health Laboratory in March and April of 1988 and 2,000 fish were lost. This same disease caused minor problems in three additional raceways and caused a combined loss of 600 smolts just prior to hauling.

Total steelhead mortality for the 1987 brood year was 775,568 eggs, fry, and smolts, which resulted in a 73.5% survival to release.

FEEDING

Niagara Springs Hatchery produced 2,153,500 steelhead during the 1987 brood year. Steelhead were fed 584,290 pounds of feed which produced 405,516 pounds of fish for a conversion of 1.44. Average length increase per month was 0.629 inches (Appendix A). Spring releases averaged 4.46 fish/pounds and were 8.24 inches total length. Monthly feed poundage, weight gain, and conversions are shown in Appendix B. Total feed cost was $146,758.80, resulting in 36 cents of feed per pound of fish produced. Fish feed is summarized in Table 1.

Steelhead were fed by hand in the outside raceways until they were large enough to take No. 3 feed. The Nielsen feeders on the bridge were used until the steelhead were released.

Table 1. Feed summary for brood year 1987 steelhead at Niagara Springs Hatchery. All feed is Rangen's.

Feed size	Pounds	Cost/pound	Cost + tax
No. 1 soft-moist	1,450	0.5500	837.38
No. 1 dry	1,900	0.2987	595.91
No. 2 dry	6,750	0.2987	2,117.04
No. 3 dry	15,300	0.2987	4,798.62
No. 4 dry	54,270	0.2987	13,223.73
3/32 dry	107,620	0.2360	26,672.17
1/8 dry	396,200	0.2360	98,178.36
1/8 soft-moist	500	0.4000	210.00
Medicated feed			
No. 1 TM50	300	0.3987	125.59
Total:	584,290	------	146,758.80

FISH MARKING

The adipose fin removal project crew clipped all steelhead on the station between September 8 and October 1, 1987. A total of 2,300,318 steelhead had their adipose fins removed. Initial clipping mortality was 4,129 fish, while delayed mortality accounted for a loss of 1,769 fish.

Fish were freeze branded at Niagara Springs Hatchery on March 30 and March 31, 1988. An LDT-3 brand was placed on 51,028 Hells Canyon stock fish. A brand quality check performed by hatchery personnel on April 20, 1988 revealed that 20% of these branded fish had burned or ulcered brands. Prerelease mortality was high on the branded fish, with 675 fish dying between branding and release. Only 46,400 fish with readable brands were released in the Snake River below Hells Canyon Dam from April 23 to April 25, 1988.

CODED WIRE TAGGING

The coded wire tagging crew placed tags in 79,012 steelhead from February 16 through February 22, 1988. Pahsimeroi River received 35,000 of these fish (Data Code 10-29-55), while the remaining 37,900 fish (Data Code 10-29-27 and 10-28-19) were released into the Salmon River at Shoup Bridge. All coded wire-tagged fish had a left ventral fin removed.

FISH RELEASES

Presmolt plants on October 19, 20, and 21, 1987 below Hells Canyon Dam were 404,000 fish, weighing 13,166 pounds (Table 2). These fish were transported by Idaho Fish and Game Department tankers.

Smolts released on March 4 through March 11, 1988 were 665,800 fish weighing 147,150 pounds. These fish were stocked below the Pahsimeroi Hatchery Weir in the Pahsimeroi River by two Idaho Power Company and two Lower Snake River Compensation Plan (LSRCP) tankers.

Two outplants were made in the spring of 1988. The Salmon River at Shoup Bridge received 103,500 smolts weighing 24,000 pounds. These fish were released April 11 and 12, 1988 by Idaho Power Company tankers. Panther Creek received 102,800 smolts weighing 26,400 pounds. These fish were released April 12 and 13, 1988 by two LSRCP tankers into a deep run in Panther Creek that was two miles upstream from the Panther Creek-Salmon River confluence. The Panther Creek and Shoup Bridge releases will hopefully result in natural runs of steelhead to these areas and provide a spring steelhead fishery below the town of Salmon.

Smolts released between March 18 and March 28, 1988 below Hells Canyon Dam totaled 877,400 steelhead, weighing 194,800 pounds. Fish plants are summarized in Table 2. Hells Canyon spring plants were released after the Pahsimeroi stock were all planted into the Salmon River drainage.

Table 2. Fish release summary for brood year 1987 steelhead from Niagara Springs Hatchery.

Release date	Release site	No. pounds	No. fish
10/19-21/87	Hells Canyon	13,166	404,000
04/04-11/88	Pahsimeroi R.	147,150	665,800
04/11-12/88	Shoup Bridge	24,000	103,500
04/12-13/88	Panther Creek	26,400	102,800
4/18-28/88	Hells Canyon	194,800	877,400
Total		405,516	2,153,500

HATCHERY IMPROVEMENTS

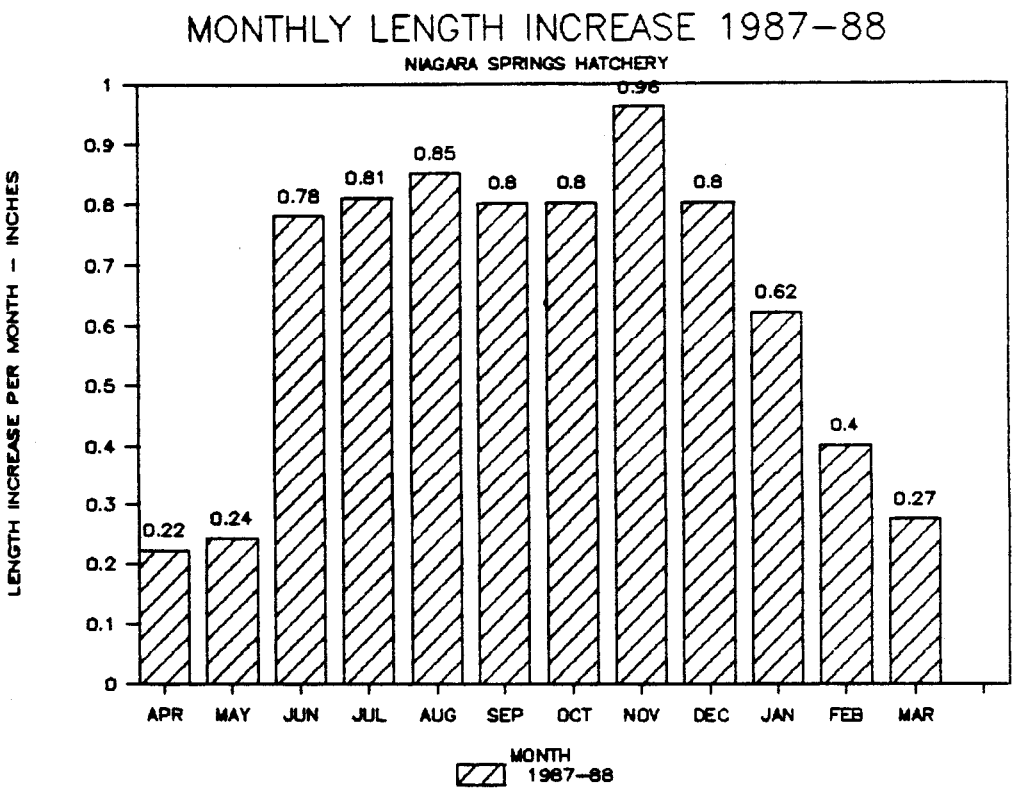
New concrete dams incorporating gate control values were built one at the Rimview Diversion and at the Niagara Springs Hatchery intake pool, allowing for better water control and reduced leakage for both stations. An additional water control gate was placed at the water inlet to the headrace. This control gate reduces water velocity and prevents air from entering flowmeter lines, this causing malfunctions.

Idaho Power Company built six portable screens for use in early rearing of steelhead fry in the even numbered outside raceways. Only the odd-numbered raceways have nursery keyways for fry screens. The new screens have doubled our early rearing capacity.

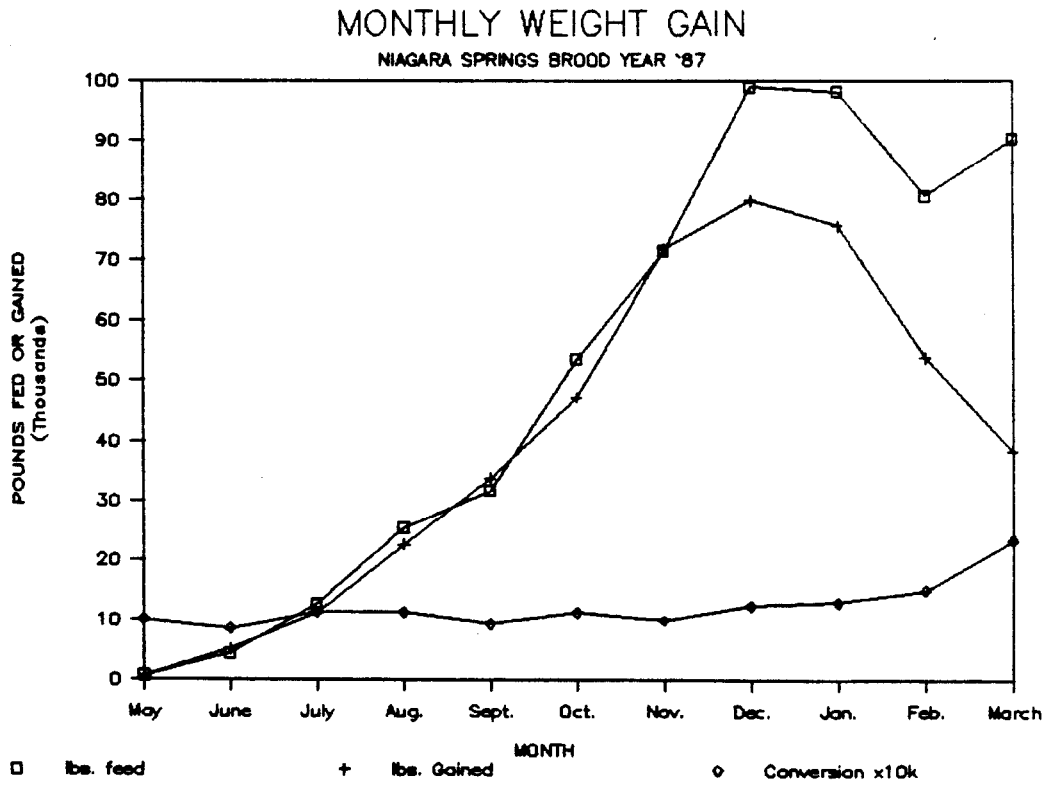
MISCELLANEOUS

The hatchery crew gave numerous slide shows and tours to school children, scouts, and other organizations. Hatchery personnel helped spawn fish at Rapid River and Pahsimeroi hatcheries. They also worked at check stations and performed some enforcement work.

The staff of permanent employees at the hatchery were Jerry Mowery, Fish Hatchery Superintendent III; Arnie Miller, Fish Hatchery Superintendent I; Bill Harryman, Fish Culturist; and Tim Wik, Fish Culturist. Temporary employees were Tamara Hash, Laborer and Jeff Williams, Biological Aide.



Appendix A. Monthly length increase of Niagara Springs steelhead brood year 1987.



Appendix B. Monthly weight gain and feed conversion of Niagara Springs steelhead - brood year 1987.

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